

What is claimed is:

- 1 1) A method of measuring at least one parameter associated with a portion of a sample
2 having formed thereon one or more structures with at least two zones each having an
3 associated zone reflectance property, the method comprising the steps of:
4 a) illuminating the at least two zones with light that is partially coherent and
5 partially incoherent;
6 b) detecting reflected and scattered light from the at least two zones;
7 c) inferring at least one zone reflectance property from the detected light; and
8 d) fitting a parametric model to the at least one measured zone reflectance property,
9 wherein said parametric model accounts for an interaction between light
10 emanating from the two zones.

- 1 2) A method according to claim 1, wherein the at least one reflectance property of light
2 includes the reflected intensity of unpolarized light or polarized light.

- 1 3) A method according to claim 1, wherein the at least one reflectance property of light
2 includes a ratio corresponding to the reflection coefficients for parallel and
3 perpendicularly polarized light. .

- 1 4) A method according to claim 1, wherein the at least one reflectance measurement
2 takes place while the sample is in a process tool.

- 1 5) A method according to claim 1, wherein the at least one reflectance parameter is used
2 to adjust the processing of a subsequent wafer.

- 1 6) A method according to claim 5, where the at least one reflectance parameter is used to
 - 2 adjust the subsequent processing of a subsequent sample on the subsequent wafer.
- 1 7) A method according to claim 1, wherein the at least two zones are aperiodic.